Drawing beyond Language and Images: Steps to Olfactory Representations

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Abstract

The paper investigates questions of multisensory representation and design. It focuses especially on olfactory representation and 'smell maps', based on the surfacing scientific literature and applications of the sense of smell in urban representation, in perfumery and in what lies between these categories, such as 'smell art'. The main purpose is that of proposing new perspectives and possibilities to the science of Drawing, and conversely to expand the traditional knowledge of architectural representation. To do so, the paper first offers a short epistemological and theoretical framework, and then compares the state of the art of different representational regimes (visual, aural, and olfactory) and examines their analogies and differences, in order to begin exploring notions – like that of 'projection' – and practices that could be transferred or translated between visual, aural and olfactory information.
Recent scientific papers, articles, and books – coming from different disciplinary fields which usually rely solely on visual information provided by survey and drawing, e.g., Archaeology – seem to prefigure a transition to an 'olfactory turn', just like the first decades of the new millennium led to an enormous and growing interest towards sound, commonly referred to as 'sonic turn'. Besides, as the modern and contemporary world and culture still focus mostly on the visual and on language, developing tools to measure and parametrize other kinds of information can lead to discover aspects of cultural heritage which are still hidden.

Keywords
Olfactory Representation, Smell Maps, Multisensory Design, Sensory Translation



Riccardo Miotto, *Untitled* (Tent Series), 2018.

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Introduction

In her critically-acclaimed book *Visual Thinking*, Temple Grandin [Grandin 2022] observes that people who think in verbal terms, dealing with thoughts via phonological language, have side-lined other kinds of thinkers, which she identifies with 'visual thinkers' – like herself [1] – or, more specifically: object visualizers – those who 'think in pictures' – and spatial visualizers - those who 'think in patterns' [2]. The way human minds work is still in great part a mystery: whenever we try to observe our thoughts, they change, similarly to what happens when a quantum physics scientist observes a particle. And we shouldn't also forget the possible distinction between conscious and unconscious thinking processes, not to mention our cohabitation with other kinds of 'minds', such as animal and vegetal and fungal – or even more elemental – intelligences [Tripaldi 2022].
Nonetheless, Grandin's theory makes sense when we observe the actual social and artefactual outcomes of thinking through words and images, the former – according to her – being more rooted in modern Western culture than the latter. Indeed, law and jurisprudence might have been more politically and socially powerful than drawing during the past centuries but, even so, the ability to think and represent using other senses – hearing, touch, taste, smell – is usually not even taken into account. Yet they are still considered fundamental in the aesthetic human experience: sound is the protagonist of an 'aural renaissance' well testified by a continuously growing number of research practices and case studies in any disciplinary field, comprising Architecture and Drawing [e.g., Mocchi 2020; Bergamo 2018]; haptic interfaces are more and more common, given the possibility to embed haptic actuators in consumer devices such as smartphones and AR setups; the tasting industry is increasing in most of its facets (not only food and wine, but also specialty coffee, etc.); and perfumery is growing as well, both in the dimensions of its market and in the number and quality of niche brands and shops, not to mention its widening presence in traditional and online media. Nonetheless, even architecture, the art of designing spatial experience par excellence, most of the times forgets everything with is not visual, which few exceptions among which, in literature: Zumthor [Zumthor 1998], Barbara [Barbara 2000], Barbara and Perilss [Barbara, Perilss 2006], Blesser and Salter [Blesser, Salter 2009]. Paradoxically, if things are changing today, it is largely due to the attempts to simulate spatial and interactive experiences in 'disembodied' AR and VR platforms.
Olfactory knowledge is the main subject of this paper because of the growing scientific interest in smell manifested by different disciplinary fields related to Drawing. In a recent paper about archaeological investigation, for example, we read that "all knowledge of the world is shaped by the way our senses perceive it. In archaeology, and especially in Egyptological studies, a visual approach has predominated the analysis of ancient material remains. When viewed from a sensory based framework, however, a new, dynamic dimensionality of the material record might be revealed" [Price 2018, p.137]: and this is just a premise by its author, Robyn Price, who cites many studies about the ways our relationship with material culture and knowledge is shaped by smell, before applying this 'olfactory turn' to archaeological investigations.
When for a research project we digitally rebuild a lost architecture, as philologically exactly as possible, we always model the way it looked like, but we rarely model the way it sounded and we almost never render and sensorially present the way it smelled, not least because we lack proper tools and methodologies. This paper partakes the scientific community's interest and literature on the way our senses work, after centuries of doubting them due to the supremacy of rational logics; it does so not much in the domain of phenomenology, which anyway provides an indispensable foundation, but mostly in those aspects which pertain to representational issues and to which Drawing theories and practices can provide knowledge for much needed developments. Transitioning from one sense to the others and vice-versa, representational issues are fundamental not only to sell stuff [3], but most of all to design experiences and collect, process, and transmit information, be it for discovery purposes, accessibility, or simply enjoying and understanding life by being more aware of the way we relate to the world.

Lightscapes, Soundscapes, Touchscapes, Smellscapes

One of anthropologist Tim Ingold's objections to the notion of soundscape [Ingold 2011, p.137] is the fact that, should we accept it, it should equally imply using the term 'lightscape' for any visual experience and representation of a landscape. His critique is not much against those who forged and employed the notion of soundscape, but mostly against its pervasive and commonly accepted epistemological framework; in fact it was published in a moment of great success of sound and soundscape studies, which today are so relevant that it is impossible to track the number of monthly publications and which involve almost any scientific and artistic discipline, from soft sciences to hard sciences and from environmental art to poetry.

Scientific, artistic, designerly and architectural research in the world of odors appears today in a similar stage of that in sound twenty years ago, with still few attempts to represent and map 'smellscapes' [Henshaw 2014] but also some approaches that start to make sense if considered together, like it happens in the fundamental and still unique anthology *Designing with Smell* [Henshaw 2018], whose first two sections are appropriately about 'Olfactory Art' and 'Representing Smell'. Like soundscape studies, 'smellscape' studies are born after the need to ensure better quality life, reducing respectively noises (unwanted and unpleasant sounds) and stinks (unwanted and unpleasant smells) in urban environments, workplaces, etc. Another aspect the two fields share is the rediscovery of ancient sensorial abilities, like those of populations who orient themselves more with sonic presences or smells than with visual references, and the ability to design and inhabit complex acoustic and olfactory spaces. It is proven that in many ancient cultures smell is fundamental to navigate space [Muller 2022, p.96; Classen, Howes, Synnott 1994], and Archaeology is more and more considering this aspect, beyond the already well-established field of Archaeoacoustics [Scarre, Lawson 2006].

At the same time, niche and artistic perfumery are experimenting new materials, new technologies and new ways to compose and project fragrances, with a rich constellation of brands and perfumers that resembles the revolutionary, buxom electronic and digital musical production of the Nineties. This expanding constellation is in need to be explored, studied, documented, and criticized in books and magazines, and to be analyzed both quantitatively and qualitatively. What we have learnt more than ever from the Covid-19 lockdown periods is that smell evokes presence, and this might be one more reason of the recent growth of the perfume industry. Smell became of particular interest not only because of the weird experience and fear of losing it, but also because it is, among our senses, the one which at the same time can be bottled and preserved (in some cases), but it is very difficult to stream online and even more to be simulated digitally: to do so, smells should be synthesized as molecules, which the big tech giants (for implementing virtual experiences in the metaverse, e.g.) and fragrance market (for online shopping, e.g.) are trying to achieve [Caussat 2022, p.84]. Tools like Scentee, by the company ChatPerf, or Cyrano and oPhone, developed by Vapor Communications, imply the presence of hardware capable of releasing combinations of molecules, activated by digital controllers and software. One of the most advanced commercial projects of this kind is currently Olfactory Virtual Reality (OVR), which can be adapted to commercially available headsets. The Monell Chemical Senses Center in Philadelphia and the Weizmann Olfaction Research Group, at the Weizmann Institute of Science in Israel, are instead working on the digitization of smells starting from a map of detectible odors [Lee et al. 2022; Ravia et al. 2020] in analogy with visual and aural information – i.e., wavelengths of light and sound – but they are still far from making it feasible.

Touch is instead partly transmittable and present in AR and VR by means of controllers, gloves, haptic suits provided with haptic actuators, etc. We might investigate 'touchscapes' as well, e.g., as regards important conditions for the blind to orient themselves in urban landscapes by following haptic routes; but also sound and smell can play a major role in urban accessibility, as acoustic and olfactory information might be experimented in order to provide direction. Taste – the sense closest to smell – can be 'bottled' through edible or drinkable substances, but tastes are mostly something we encounter only when we are looking for

them, while instead odors, sounds, haptic feedbacks, and images can inhabit a space, become part of an environment, and encounter unexpectedly someone, changing her experience. The challenge to represent and map smells offers enormous opportunities of innovation and, at the same time, can rely on and must beware of already existing representational codes and terminology. For example, 'smell maps', just like sound maps, offer the possibility to encode information in a visual cartesian map after having collected qualitative and quantitative olfactory data, as it happens in the pioneer work by Kate McLean (fig. 1) [4], but at the same time they imply the same paradox of sound maps [Bergamo 2018]: smell and sound are always embodied and subjective, thus 'perspectival', while maps are always disembodied, objective, views from the 'eye of god', or outcomes of a process of projective synthesis. Nonetheless, the lexicon and techniques for describing and experimenting with smell share more than something with drawing. It is impossible to report every facet in this short paper, but for example the notion of projection plays a fundamental role in determining how far a perfume, or a general smell, can travel to be perceivable by a human nose, which anyways also depends on highly subjective factors and environmental parameters such as temperature, hygrometry, atmospheric pressure, and convection movements [Dematons 2022, p.80]. The projection of smells can be studied, visualized, and designed when planning the olfactory experience of an event, e.g., in a theater, by diffusing smoke and looking at its behavior in space, according to air convection. Smoke is therefore considered as an analogous of the thread in Albrecht Dürer's famous door engraving (1525) (fig.2), where the thread attached to the end of a stylus passes through the door's frame and then through a hook on the wall; and of Mario Bettini's light projection from a lamp to visualize the diffraction of light passing through a pipe containing polyhedral lens (fig. 3). Similarly to light passing through Bettini's device and to the origins of the word 'perspective', perfume's etymology evokes 'smoke through', which is something physical transitioning in a space. These and other analogies assist the complex task to re-present smells through words, sounds and images – where drawing is explicitly called to action – which is a fundamental challenge, since smell still cannot be transmitted among common users, and at the same time representation can learn to better evoke, and contribute to encode, a precise smell, geometrical space, sound, etc.

Somewhere between perfumery and smell maps (or smell design), it is possible to identify examples of 'smell art', just like sound art exists somewhere in between music and sound

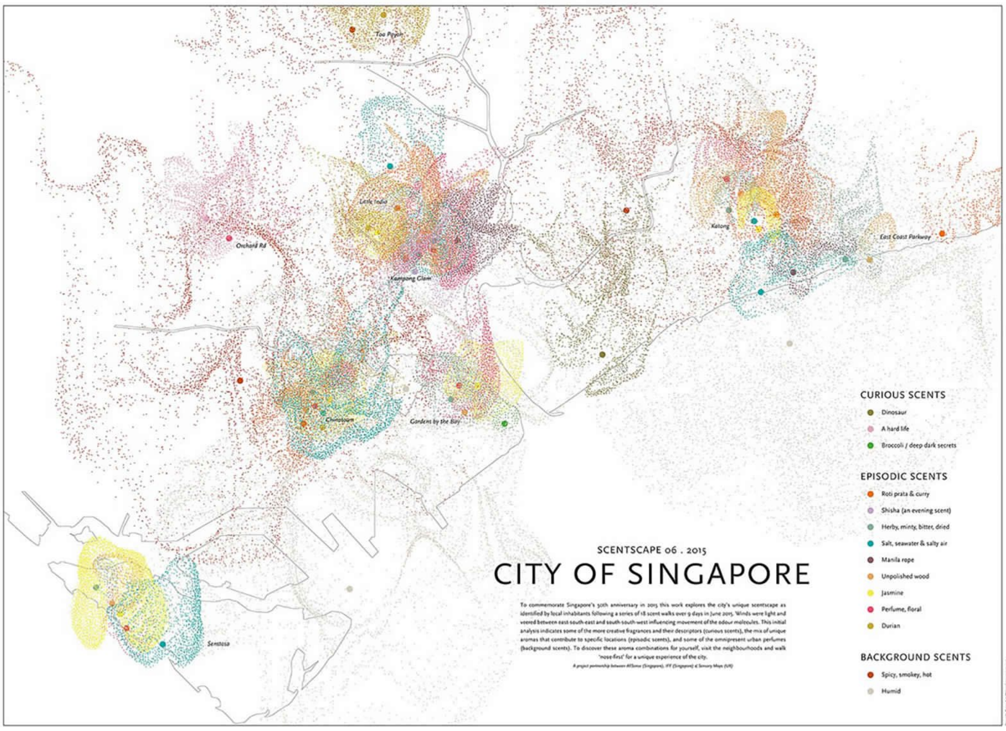
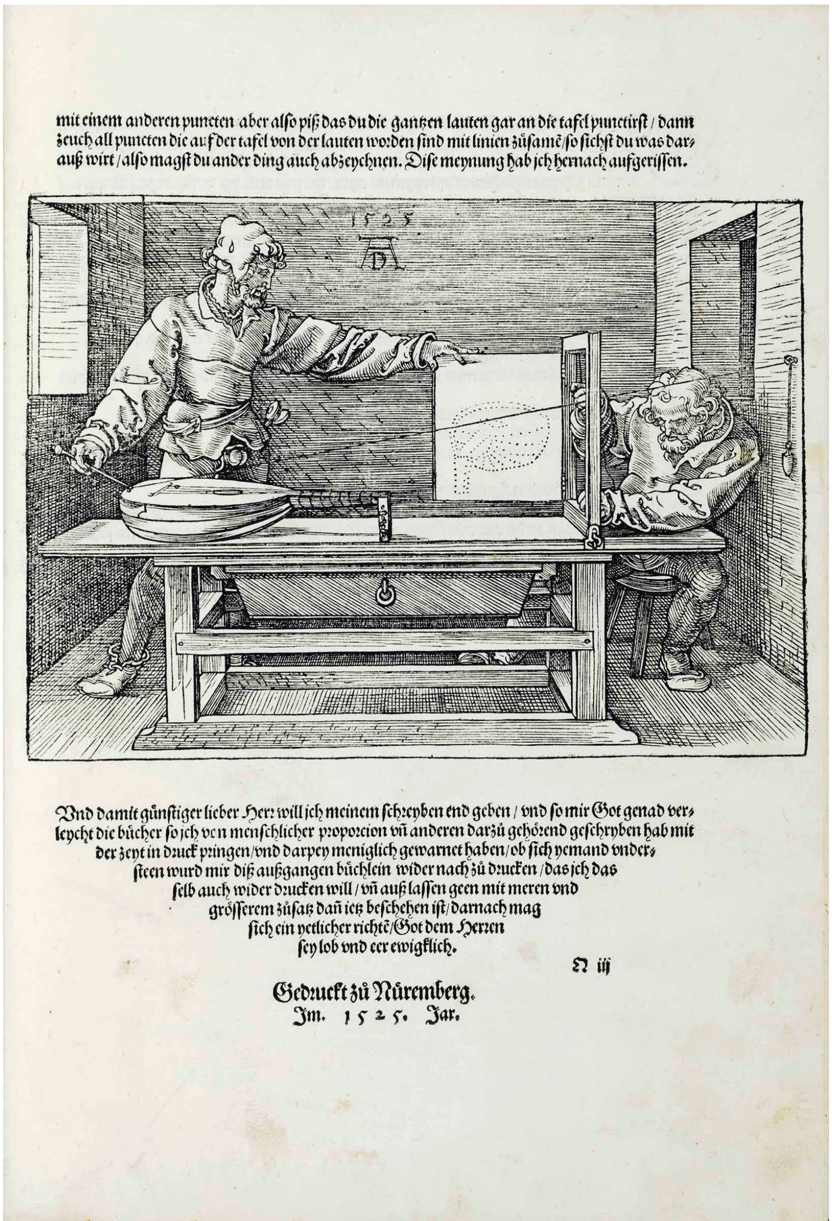


Fig. 1. Kate McLean, *Scentscape 06.2015*. Singapore.



mit einem anderen puncten aber also piß das du die gantzen lauten gar an die tafel punctirst / dann zeuch all puncten die auf der tafel von der lauten worden sind mit linien zůsamē/so sichst du was darauß wirt / also magst du ander ding auch abzeychnen. Dise meynung hab ich hernach aufgerissen.

Vnd damit günstiger lieber Herr will ich meinem schreyben end geben / vnd so mir Got genad verleycht die bůcher so ich von menschlicher proporcion vñ anderen darzů gehörend geschryben hab mit der zeyt in druck pringen/vnd darpey meniglich gewarnet haben/ob sich yemand vndersteen wurd mir diß außgangen bůchlein wider nach zů drucken /das ich das selb auch wider drucken will / vñ auß lassen geen mit meren vnd grösserem zůsatz dañ ietz beschehen ist/darnach mag sich ein yetlicher richtē/Got dem Herren sey lob vnd eer ewigklich.

N iij

Gedruckt zů Nůremberg.
Im. 1525. Jar.

Fig. 2. Albrecht Dürer, *Underweysung der messung mit dem zirckel un richt scheyt*, 1525.

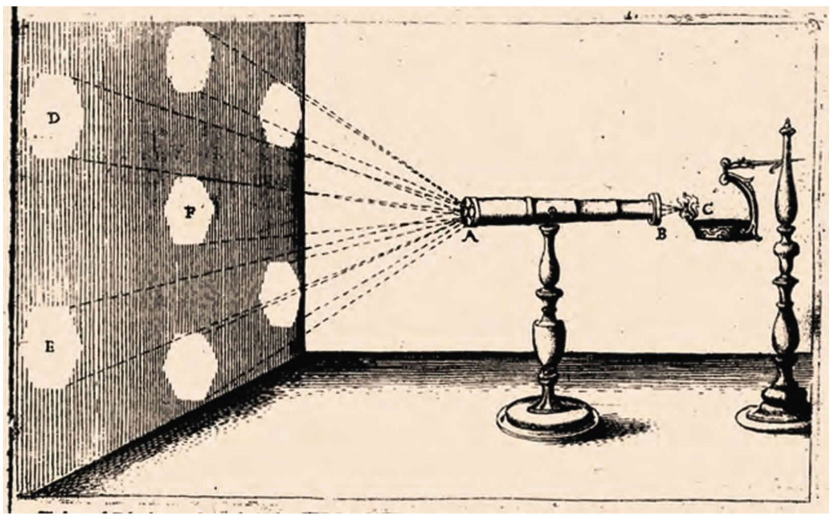


Fig. 3. Mario Bettini, *Apiaria universae Philosophiae Mathematicae*, 1642. Book V, chap. 3, p. 33, detail.



Fig. 4. Paul Vanouse, *Labor* (2019-ongoing), created by bacteria propagating in the glass bioreactors reproducing the smell of people exerting themselves under stressful conditions. Photo of the installation by Tullis Johnson for Ars Electronica.

maps (or sound design). The category of smell art could be for example applied to some surrealist works, to most of the works by Klara Ravat [5], Sissel Tolaas [6] and Maki Ueda [7], to the installations *Teresa aus Madrid mit gelbem Kleid* (1997) by Thomas Zitzwitz [8] and *Labor* (2019) by Paul Vanouse [9] (fig. 4), and have been investigated by the exhibition *There's something in the air - Scent in Art* (22.03.2015 - 02.08.2015) curated by Caro Verbeek at the Museum Villa Rot [10] near Ulm (Germany). Clearer examples of olfactory representation might be found in projects related to cultural heritage, such as the olfactory path *The perfume of time* at the Museum of the Delta Antico in Comacchio, with smells designed by Claudia Scattolini and Laura Bosetti Tonatto in collaboration with the University of Ferrara et al. [11], and in the expensive, highly technological project *Lascaux IV* (2016), designed by Snøhetta for the landscape of Montingac (France) and aiming at reproducing an experience as close as possible to that of the not-anymore-accessible original site of the Lascaux cave. The project of *Lascaux IV* (fig. 5), the third replica of the original cave containing the world-famous pre-historic paintings, is grounded on accurate surveys of the original site with state-of-the-art technologies; the team, involving more than a thousand people, worked non only with 3D point clouds and CNC-milled molds, but also on the acoustics of the space and on other parameters. Visitors of *Lascaux IV* encounter today almost the same temperature, air pressure, smell of damp and sounds as the original cave.

If this can be considered the state of the art, we can expect that the greatest the advancements in the precision of the models of atmospherical behavior of odorous particles in the air, the more accurate the precision in virtual modelling, just like it happened with perspectival applications and digital drawing.



Fig. 5. Lascaux International Centre for Cave Art (*Lascaux IV*), interior view. Photograph by Simone Ramella.

Conclusion

It might be too early, or even impossible, to investigate the minds of humans who self-proclaim to be aural thinkers, olfactory thinkers, haptic thinkers, or gustatory thinkers. And it might be wrong to separate these categories from each other, besides from those of visual and verbal thinkers. But we must face the necessity to reconsider what senses can teach to humans, which has partly been lost after the dominance of language, of rational sciences and of the digital revolution. Michel Serres [Serres 2008, p.112], among others, admitted the political supremacy of the philosophy of language over phenomenology, due also to the Cartesian doubting of senses, among which smell, the one that transitions, "slides from knowledge to memory and from space to time - no doubt from things to beings" [Serres 2008, p.70]. Tim Ingold is among those who reverse the emphasis on the materiality of objects against the properties of materials: "the very notion of material culture, which has gained a new momentum following its long hibernation in the basements of museology, rests on the premise that as the embodiments of mental representations, or as stable elements in systems of signification, things have already solidified or precipitated out from the generative fluxes of the medium that gave birth to them" [Ingold 2007, p.6].
In another text Ingold describes his experience in "The conical lodge at the centre of the earth-sky world" [Ingold 2022, pp. 153-165] he visited in Tromsø, Norway: a tent of the kind "once widely used among indigenous people throughout the circumpolar region" [Ingold 2002, p.153], made of wooden poles and covered by caribou skins, sewed together. Being there, kneeling, he experiences something very different from being in a common house, with walls and windows. "When you look out from the windows you see the land stretching out into the distance, where it seems to meet the sky along the line of the far horizon. Inside the lodge, however, there are no horizons to be seen. Earth and sky, far from being divided at the horizon, seem rather to be unified at the very centre of my emplaced being. But this world is not a landscape" [Ingold 2022, pp.153-154]. He also realizes that a lodge, or tent, is a sort of archetipal architecture, beyond both stereotomics and tectonics [12], just like in artist and architect Riccardo Miotto's representations of tents as primeval architectures, extensions of the human skin [Miotto 2022]; and that "the idea of landscape, in its modern guise, entails a transition from the gathering of experiences to their projection, or from a

haptic to an optical mode of perception" [Ingold 2022, p.155]. The idea of landscape which is contested and subverted by Ingold is the same which Mark Jakobs [Jakobs 2022, pp.77-90] relates to the invention of perspective through the representational and political device of the window and, as Miotto suggests, this awareness and possible turn could even lead to the development of expanded maps of the world [13].
While Ingold focuses in his text mostly on the haptic, as opposed to the visual, it is certainly possible to extend the experience of being in a tent also to the aural and olfactory domains: we can smell and listen what is outside, while not being able to extend our gaze over the outer landscape, which is exactly the opposite of what we do in the buildings where we usually dwell: one more reason to link the knowledge of Drawing with other approaches to observation and representation, aiming at the whole sensorium.

Notes

[1] See also Grandin 1995. Verbal thinkers are the focus of other studies and books, e.g., the recent Kross 2021.

[2] An example is that of architects who can represent in their minds several plans for a building typology, to abstractly extract its salient features and apply them to the specific thing they are designing.

[3] A relevant aspect which contributes funding private research on multisensory perception is branding. It is the case of century-old company Muzak, which recently became Mood-Media after years of multisensory branding for companies, hotels, etc.

[4] See e.g., McLean 2020 and <https://sensorymaps.com> (accessed 28 January 2023).

[5] See <https://www.klararavat.com/olfactory-art> (accessed 28 January 2023).

[6] See <https://www.resurrectingthesublime.com> (accessed 28 January 2023), which is most of all a project of preservation of olfactory heritage.

[7] See <https://ueda.nl> (accessed 28 January 2023).

[8] <http://www.zitzwitz.com/teresa-aus-madrid-mit-gelbem-kleid> (accessed 28 January 2023). In this installation, architectural spaces of a typical house are characterized not by being divided by walls, but the objects in them and by their smells.

[9] <https://www.paulvanouse.com/labor.html> (accessed 28 January 2023).

[10] See <https://www.villa-rot.de/en/archiv/scent-in-art/> (accessed 28 January 2023).

[11] See <http://www.museodeltaantico.com/itinerari-e-didattica/percorso-multimediale/> (accessed 28 January 2023).

[12] Ingold here, like in other texts of his, refers to Gottfried Semper's definitions of the categories of building. The tent belongs to the category of the 'heart with its fire', whose presence and odorous smoke connect earth and sky, Ingold 2022, p.164.

[13] Miotto suggests thinking for example that dogs have their own 'olfactory maps', whose extensions consider affects, paths and memories. Merging and layering 'mapping' systems that are typical of different species could possibly lead to new discoveries and new possibilities to co-exist with non-humans. I'm thankful to Riccardo Miotto for sharing his thoughts about this topic.

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